REMARKS

Claims 1-14 are at issue. No claims have been allowed.

Claims 1-11 and 14 have been rejected under 35 U.S.C. 103(a) as unpatentable over Murakami et al. (USP 6,550,567) in view of Alexander Kapelevich's article "Geometry and design of involute spur gears with asymmetric teeth."

Murakami et al. discloses a worm gear of a vehicle steering system. Murakami et al. does not disclose (as also stated by the Examiner) that the worm wheel has teeth that have different pressure angles on the left and the right so that the normal force between the worm and worm wheel is independent of the direction of rotation of a torque exerted on the worm by the worm wheel.

Kapelevich teaches a gear which has teeth that have different pressure angles on the left and right. Kapelevich discloses (as also reflected in the title of his article) involute **spur** gears. Spur gears are the simplest and probably most common type of gear (see www.Wikipedia.com article on "Gear"). The general form of a spur gear is a cylinder or a disk. The teeth project radially.

Kapelevich states that conventional involute spur gears are designed with symmetric tooth side surfaces. Kapelevich furthermore states that it is well known that the conditions of load and meshing are different for **drive** and **coast** tooth sides. Lastly, Kapelevich states that the application of asymmetric tooth side surfaces for the **drive** side and **coast** side enables an increase in the load capacity and durability for the **drive** tooth side.

Applicants have disclosed and claimed in amended independent claim 1, a **worm** gear for a vehicle steering system wherein the worm gear is adapted to be bidirectionally driven. Kapelevich discloses spur gears wherein the direction of **drive** is unidirectional since each tooth has both a **drive** side and a **coast** side. By designing asymmetrical tooth surfaces on the **drive** and **coast** sides of each tooth, Kapelevich is able to increase the load capacity and durability for the **drive** tooth side. Since the **coast** tooth side does not have to withstand such loads, the **coast** flank can have a different geometry from the **drive** flank.

Applicants also have claimed that by virtue of having asymmetric tooth flanks on the left and right sides, the normal force between the worm and the worm wheel is independent of the direction of rotation of torque exerted on the worm by the worm wheel. Kapelevich does not

disclose such structure as it is clear from his description that he envisions only unidirectional rotation of his spur gears and can therefore define a **drive** side and a **coast** side for each tooth.

It goes without saying that combining the asymmetric tooth configuration of Kapelevich with Murakami et al. would result in an unsatisfactory structure which would quickly fail as Kapelevich's asymmetrical tooth **coast** flank would be unable to bear the same load as the **drive** flank.

Furthermore, one skilled in the art would not be likely to combine the teachings of Kapelevich with Murakami et al. since Kapelevich discloses a **spur** gear which is adapted to be unidirectionally driven. Such structure would be completely inapposite for combining with Murakami et al., who shows a bidirectional worm gear structure, and would quite clearly result in an unsatisfactory structure.

For all of the above reasons, Applicants respectfully submit that the claims, as amended, distinguish patentably over the cited references and are not obvious in view thereof.

In the event Applicants have overlooked the need for an extension of time, payment of fee, or additional payment of fee, Applicants hereby petition therefore and authorize that any charges be made to Deposit Account No. 02-0385, Baker & Daniels LLP.

Should the Examiner have any further questions, he is invited to telephone the undersigned at 260-460-1695.

Respectfully submitted,

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